

GRINDING WHEEL IN COMBINATION WITH A GRINDING RING

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a grinding wheel in combination with a grinding ring, and more particularly to a grinding ring having multiple teeth formed on a peripheral edge of the grinding ring and a tubular extension centrally formed on a center of the grinding ring such that when the grinding ring is combined with the grinding wheel, extension of the teeth of the grinding ring into the grinding wheel is able to enhance the combining force therebetween.

2. Description of Related Art

[0002] A conventional grinding wheel assembly is shown in Figure 15, which includes a grinding ring 10a and a grind wheel 20a. The grinding ring 10a is a shallow disk and has a central hole 11a, a tubular extension 12a extending from a peripheral edge defining the central hole 11a, a first annular extension 13a extending from an outer periphery of the tubular extension 12a, a flange 15a formed around an outer peripheral edge of the first annular extension 13a and a second annular extension 14a extending from an outer periphery of the flange 15a. The grinding wheel 20a has a hole 21a corresponding to the flange 15a. When the grinding ring 10a is to be combined the grinding wheel 20a, the flange 15a of the grinding ring 10a is extended into the hole 21a and an adhesive is applied to secure the engagement between the flange 15a and an inner periphery defining the hole 21a.

[0003] Another conventional grinding wheel assembly is shown in Figure 16 of the attached drawings, which includes a grinding ring 30a and a grinding wheel 20a. The grinding ring 30a is a shallow disk and has a central hole 31a, a tubular extension 32a, an annular extension 33a extending from an outer periphery of the tubular

extension 32a and teeth 34a formed on a peripheral edge of the annular extension 33a. When combining the grinding ring 30a and the grinding wheel 20a is necessary, the teeth 34a is inserted into the grinding wheel 20a and an adhesive is applied from the central hole 31a to secure the engagement therebetween.

[0004] A further conventional grinding wheel assembly is shown in Figure 17 of the attached drawings, which includes a grinding ring 40a and a grinding wheel 50a. The grinding ring 40a is a shallow disk and has a central hole 41a, a tubular extension 42a extending from a periphery defining the central hole 41a, an annular extension 43a extending from an outer periphery of the tubular extension 42a and teeth 44a extending from a bottom face of the annular extension 43a, each tooth 44a having a barb 441a formed on a free end of the tooth 44a and a peripheral side 45a formed around the teeth 44a. The grinding wheel 50a is composed of multiple grinding plates 51a superposed on top of one another to form a circle. When the combination between the grinding wheel 50a and the grinding ring 40a is necessary, the teeth 44a is inserted into the grinding wheel 50a to allow the grinding ring 40a to cover all the grinding plates. Then an adhesive is applied from sides of the grinding ring 40a to securely engage the grinding plates of the grinding wheel 50a and combine the engagement between the grinding ring 40a and the grinding wheel 50a.

[0005] Although each of the grinding wheel assemblies initially has a firm combination between the grinding ring and the grinding wheel, there are still disadvantages making the combination unreliable, which are:

[0006] The grinding ring of Figure 15 is made of plastic and has an area substantially the same as that of the grinding wheel. The adhesive seems the only solution to securely combine the engagement therebetween. Accordingly, the grinding ring is easily engaged with the polishing object and thus the surface of the polishing

object is easily damaged. Further, the engagement between the grinding ring and the grinding wheel by the adhesive is not able to provide effective combining force and the grinding ring is easily fallen from the grinding wheel.

[0007] The grinding ring of Figure 16 is made of metal such that using a mold to produce such a grinding ring with teeth formed on the periphery of the grinding ring. Besides, there is only the extension of the teeth into the grinding wheel to secure the engagement between the grinding ring and the grinding wheel, horizontal extension is not provided to the grinding ring such that when the grinding ring is polished, the grinding ring is easily broken due to lack of strength, which leads to a bad influence to the polishing surface of the object to be polished.

[0008] The conventional ring in Figure 17 is made with a mold, temperature and pressure must be strictly controlled, resulting in high cost. Further, when the grinding ring is used with the grinding wheel having multiple grinding plates superposed together, the grinding ring is easily overturned due to lack of strength.

[0009] To overcome the shortcomings, the present invention intends to provide an improved grinding ring in combination with a grinding wheel.

SUMMARY OF THE INVENTION

[0010] A primary objective of the invention is to provide a grinding ring made by pressing and having a centrally defined hole and teeth formed on a periphery of the grinding ring such that when the grinding ring is combined with the grinding wheel, the extension of the teeth into the surface of the grinding wheel is able to enhance the engagement between the grinding ring and the grinding wheel.

[0011] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

- [0012] Figure 1 is a perspective view of a grinding ring and a grinding wheel of the present invention;
- [0013] Figure 2 is a perspective view showing the combination of the grinding ring and grinding wheel in Figure 1;
- [0014] Figure 3 is a cross-sectional view taken along line 3-3 in Figure 2;
- [0015] Figure 4 is a perspective view of a grinding ring and a grinding wheel of a preferred embodiment of the present invention;
- [0016] Figure 5 is a perspective view showing the combination of the grinding ring and grinding wheel of Figure 4;
- [0017] Figure 6 is a cross-sectional view taken along line 6-6 in Figure 5;
- [0018] Figure 7 is an exploded perspective view of the grinding ring and the grinding wheel of the present invention;
- [0019] Figure 8 is a perspective view of the combination of the grinding ring and the grinding wheel in Figure 7;
- [0020] Figure 9 is a cross-sectional view taken along line 9-9 in Figure 8;
- [0021] Figure 10 is a schematic cross-sectional view showing the application of the embodiment in Figure 7;
- [0022] Figure 11 is an exploded perspective view of another embodiment of the grinding ring and the grinding wheel;
- [0023] Figure 12 is a perspective view showing the combination of the grinding ring and the grinding wheel in Figure 11;
- [0024] Figure 13 is a cross-sectional view taken along line 13-13 in Figure 12;
- [0025] Figure 14 is a schematic cross-sectional view showing the application of the embodiment in Figure 11;

[0026] Figure 15 is an exploded perspective view of a conventional grinding ring and the grinding wheel;

[0027] Figure 16 is an exploded perspective view of a conventional grinding ring and the grinding wheel; and

[0028] Figure 17 is an exploded perspective view of a conventional grinding ring and the grinding wheel.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0029] With reference to the drawings and in particular to Figures 1, 2 and 3, a grinding ring 1 in accordance with the present invention has a centrally defined hole 11, a tubular extension 12 extending from a periphery defining the hole 11, an annular extension 13 extending from an outer periphery of the tubular extension 12 and a skirt 14 formed adjacent to the extension 13. Multiple teeth 15 are pressed at a joint between the annular extension 13 and the skirt 14 and multiple barbs 151 are respectively formed on the teeth 15. The grinding wheel 2 is made of cloth made of wool. The cloth is on top of one another and then securely engaged with one another by any known method. When the combination between the grinding ring 1 and the grinding wheel 2 is required, the grinding ring 1 is placed on top of the grinding wheel 2. Then the grinding ring 1 is pressed downward to the grinding wheel 2. Due to the pressing process, the teeth 15 and the barbs 151 are formed and extended into the grinding wheel 2. An adhesive 6 is applied from the hole 11 to fill the space between the grinding ring 1 and the grinding wheel 2 so that engagement between the grinding ring 1 and the grinding wheel 2 is enhanced.

[0030] Also referring to Figures 4, 5 and 6, it is noted that the grinding ring in accordance with the present invention has a centrally defined hole 11, a tubular extension 12 extending from a periphery defining the hole 11, an annular extension 13

extending from an outer periphery of the tubular extension 12 and a skirt 14 formed adjacent to the extension 13. Multiple teeth 15 are pressed at a joint between the annular extension 13 and the skirt 14 and multiple barbs 151 are respectively formed on the teeth 15. The grinding wheel 3 is made of non-woven cloth and secured together by a machine. When the combination between the grinding ring 1 and the grinding wheel 3 is required, the grinding ring 1 is placed on top of the grinding wheel 3. Then the grinding ring 1 is pressed downward to the grinding wheel 3. Due to the pressing process, the teeth 15 and the barbs 151 are formed and extended into the grinding wheel 3. An adhesive 6 is applied from the hole 11 to fill the space between the grinding ring 1 and the grinding wheel 3 so that engagement between the grinding ring 1 and the grinding wheel 3 is enhanced.

[0031] With reference to Figures 7, 8 and 9, the grinding ring 1 in accordance with the present invention has a centrally defined hole 11, a tubular extension 12 extending from a periphery defining the hole 11, an annular extension 13 extending from an outer periphery of the tubular extension 12 and a skirt 14 formed adjacent to the extension 13. Multiple teeth 15 are pressed at a joint between the annular extension 13 and the skirt 14 and multiple barbs 151 are respectively formed on the teeth 15. A disk 4 is sandwiched between the grinding ring 1 and the grinding wheel 5 and has a through hole 41 in communication with the hole 11 of the grinding ring 1. The grinding wheel 5 is made of multiple elongated cloth 51 stacked together to form a circle and has an aperture 52 in alignment with the through hole 41 of the disk 4. When the combination between the grinding ring 1 and the grinding wheel 5 is required, the disk 4 is placed on top of the grinding wheel 5 to align the through hole 41 with the aperture 52. Then the grinding ring 1 is placed on top of the disk 4. The grinding ring 1 is pressed downward to the disk 4. Due to the pressing process, the teeth 15 and the barbs 151 are formed and

extended into the disk 4 and the grinding wheel 5. An adhesive 6 is applied from the hole 11 to fill the space between the grinding ring 1, the disk 4 and the grinding wheel 5 so that engagement between the grinding ring 1, the disk 4 and the grinding wheel 3 is enhanced. With reference to Figure 10, it is to be noted that when a tool is employed to extend into the hole 11 to drive the combination of the grinding ring 1 and the grinding wheel 5, the periphery of the grinding wheel 5 as well as that of the disk 4 will be worn simultaneously.

[0032] With reference to Figures 11, 12 and 13, the grinding ring 1 in accordance with the present invention has a centrally defined hole 11, a tubular extension 12 extending from a periphery defining the hole 11, an annular extension 13 extending from an outer periphery of the tubular extension 12 and a skirt 14 formed adjacent to the extension 13. Multiple teeth 15 are pressed at a joint between the annular extension 13 and the skirt 14 and multiple barbs 151 are respectively formed on the teeth 15. The grinding wheel 5 is made of multiple elongated cloth 51 stacked together to form a circle and has an aperture 52 in alignment with the hole 11 of the grinding ring 1. When the combination between the grinding ring 1 and the grinding wheel 5 is required, the grinding ring 1 is placed on top of the grinding wheel 5. The grinding ring 1 is pressed downward to the grinding wheel 5. Due to the pressing process, the teeth 15 and the barbs 151 are formed and extended into the grinding wheel 5. An adhesive 6 is applied from the hole 11 to fill the space between the grinding ring 1 and the grinding wheel 5 so that engagement between the grinding ring 1 and the grinding wheel 5 is enhanced. With reference to Figure 14, it is to be noted that when a tool is employed to extend into the hole 11 to drive the combination of the grinding ring 1 and the grinding wheel 5, the periphery of the grinding wheel 5 as well as the adhesive 6 will be worn simultaneously.

[0033] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.